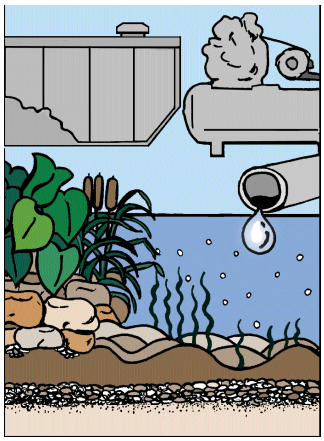

Subsurface Drip Disposal

System Construction and Maintenance

What is a subsurface drip disposal system?

The subsurface drip wastewater disposal system is actually a modified underground absorption system. It's a shallow, pressure-dosed, slow-rate method of disposal for treated wastewater. Drip technology has been used in the past mostly for agricultural irrigation purposes. Only recently has the technology been used for wastewater disposal.

The subsurface drip theory is simple, but the technology is advanced. This system doses the soil at a shallow level, at a very slow rate, and with very small amounts of water, but it uses several hundred or thousand dosing points equally. It would be comparable to using a dropper to distribute a small volume of water over several square feet of soil surface. The total effect to any one spot of the soil surface should not be noticeable.

How does a subsurface drip system work?

This system can be used to help water shrubbery or yards, an option that may appeal to many homeowners. Also, the subsurface drip system can be placed in areas with trees by routing the drip tubing around the trees.

On many parcels of property with limited space and clay textures or high seasonal water tables, this might be the only wastewater system that will work properly.

In a drip system, the wastewater from the home must first undergo primary treatment. Some systems use aerobic treatment plants for this primary treatment while others use a septic tank. Which type system is used depends on the system manufacturer. The effluent is discharged from the primary unit and collected in a tank, then stored until enough is available to pump into the drip lines.

Before the effluent is pumped into the drip lines, it's filtered by some means to remove any solids that can cause a clogging problem in the drip lines. Once filtered, the effluent is pressurized and sent to the subsurface drip field, then allowed to slowly drip into the soil.

The drip field consists of polyethylene tubing installed in parallel rows at least two feet apart. The tubing has emitters installed at two-foot intervals that distribute the effluent into the soil very slowly. A means is also provided to backwash the drip lines and filter to prevent clogging.

Will a subsurface drip system work on my property?

Most of the treatment of wastewater from a septic tank takes place in the soil where nutrients and pathogens are removed. While aerobic treatment plants provide a cleaner effluent, some final treatment still must take place in the soil. Therefore, ensuring that the soil conditions are suitable for wastewater treatment is important.

The presence of a seasonal water table in many soils might require a modification for drip underground absorption systems to perform correctly. These water tables are not used for drinking purposes, but are shallow (less than five feet) and seasonal (late winter and early spring). They might be at the surface but are typically between the surface and depth of 24 inches.

Seasonal water tables are caused by a restrictive layer that doesn't allow movement of rain water deeper into the soil. As rainfall increases, the soil material above these restrictive layers becomes saturated. Once wastewater enters into a saturated soil, it moves rapidly, thus preventing the soil from effectively removing the pathogens present in the wastewater.

These limitations with subsurface systems necessitate any underground wastewater systems being placed at least 12 inches above a seasonal water table. Often these seasonal water tables are so close to the soil surface that it is necessary for a sandy fill material to be added on top of the natural soil surface to maintain

a 12-inch separation. In such situations, enough fill also has to be added to provide a minimum of six inches of cover over the drip lines. All grass and organic matter must be removed before adding the fill material to prevent the formation of an impermeable layer.

Since the underground absorption system relies on the soil for disposal, the soil permeability is very important. Permeability is the rate at which water will move in a soil. The permeability of the natural soil —not the fill — determines the size of area needed to adequately dispose of the effluent generated by a home. Soils with low clay contents have high permeability rates and therefore require less of an absorption area than do soils with high clay contents.

Subsurface drip disposal systems must not be located in depressed areas where surface water will accumulate. Also excavation for any underground absorption systems must not be done when the soil is wet enough to smear or compact easily.

The drip tubing may be placed in trenches constructed with ditching machinery or by approved plowing methods. The tubing may be placed no deeper than 18 inches.

All components of the system must be located a minimum of: (a) five feet from dwellings, and (b) 10 feet from any property line. No component of the system can be located under dwellings or permanent structures. The underground absorption area must be located a minimum of 100 feet and downslope from any public or private water source, including wells on any adjoining property. The underground absorption area must not be used for vehicular traffic or parking.

How do you maintain a subsurface drip disposal system?

Maintenance of a subsurface drip disposal system is critical. The one thing that most homeowners neglect is to have the septic tank or treatment plant pumped periodically.

All wastewater contains some solids which settle to the bottom of treatment tanks. Over time solids will fill the tank. When this happens, the solids begin to leave the tank and cause filter problems due to clogging. A regular pump-out schedule can prevent this. While the pump-out schedule will be determined by how much organic material is loaded into the system, most tanks should be pumped every three to five years. The cost of this service is reasonable and many contractors are available who will check the solid level in a tank to determine if it needs to be pumped.

Subsurface drip disposal systems use electrical pumps, so it's necessary to ensure that the pumps are maintained and operating.

The homeowner should avoid making excessive demands on the system's capacity. Several loads of laundry in a day, extremely long showers, or whirlpool tubs will put an extra strain on a wastewater system. Avoid unnecessary flushing of toilets, and repair leaky facets.

Storm water or runoff from roofs should never be placed in a wastewater system. Sending wastewater to the tank too fast can cause solid materials to pass into the drain field without undergoing the gradual digestion that is expected to take place in the tank. Using the system at or below its design capacity will help to ensure against failure.

Where can I get more information about subsurface drip disposal systems?

For more information about Subsurface Drip Disposal Systems and their possible use in your home wastewater system, contact your county public health environmentalist.

MISSISSIPPI STATE DEPARTMENT OF HEALTH

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